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Mint of the United States at Philadelphia,

MELTING AND REFINING DEPARTMENT,

Philadelphia, 20th October —, 1886.

Sir,

Permit me to draw your attention to some facts, in relation to Bars of fine Silver, deposited in the Mint for coinage by ~~Mess. Handy & Harman, and others~~, which explain why (we believe that we are obliged to) ~~we~~ reject some of them ~~bars~~, as unsuitable ~~unfit~~ to be deposited in the Mint.

I. We prefer rejecting bars that vary much in standard fineness from the Report of our Assayer, because long experience has shown that we thereby avoid time-wasting discussions, and sometimes unjust personal criminations, on the calculated value of the Silver offered for deposit.

II. We rarely reject bars that exhibit the so-called sprouting, unless too light in alleged weight, but a roughness on the air-cooled surface of a bar is not necessarily "sprouting", altho sometimes mistaken for it. The term is taken from a fancied and not remote resemblance to

the sprouting of young plants in the ground, and when it is a clear case of sprouting, it is safe to conclude that the silver in question is of the finest kind, that can be made; that it is 999 or over in fineness, and free from even 1000 of a bad metal, i.e. one that hardens or embrittles silver. We therefore never refuse such bars unless some other serious deficiency in weight, &c. be observed in them

III. Sometimes a roughness of surface has a faint resemblance to sprouting, and is mistaken for it by unskilled persons. This roughness is generally due to making post- or after-castings, i.e. when a bar has been cast, and it looks as if a little more silver might be added to increase the weight of the bar, it is poured on the top of the bar, after the latter has congealed or while it is congealing. It does not seem to belong to the bar, and the several waves of the melted metal, as it congeals, interfere with each other, just like the waves of a surface of disturbed water, which instantly smooths down, but unlike water, the silver waves become permanent, and present the roughness alluded to. There are two points to be specially noticed in this congelation. 1. It pre-

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quently encloses water within its congealed waves and folds, and hence the bars, some time after they are made, weigh much less by loss of water, and so make an inexplicable loss (apparently), when they are weighed at the Mint. These differences in weight naturally give rise to interminable discussions and too often to recriminations against the Government and its officers. It is difficult for most people to understand how water can be embraced within a mass of melted metal, except by receiving the fact as the result of careful observation and experiment. Geologists are just beginning to receive the idea that masses of melted rocks hold water liberally distributed through them, which we have long known in melted gold and silver in the U. S. Mint. I have occasionally witnessed a porous bar of silver, as shown by the porosity of the cut for assay,

to hold water tenaciously until it was melted again, and sometimes kept for a time in the melted state. I once witnessed several ounces of water obtained from a silver bar.

2. The second point to be noted in this congelation is that through accident or carelessness, solid things, like pieces of iron or steel, or slag or stone, or even a little earth, may be caught in the congealing waves of silver, and when weighed, the bar shows this added weight, which is taken as silver, and credited to the depositor, and of course, against the Government, whose interests we are appointed to guard. Having several times actually found such foreign matters in bars, that are heaped in congealed waves and rounded protuberances on the casting surface, we have thought it our duty to defend the Government against unjust imputations of fraud, or mistake in weight, by rejecting such rough-surfaced bars, especially where they have been hammered down by the melter or other person. The silver smelters can avoid such doubtful heapings on their bars, by not endeavoring to swell them to unusual size, or to add to them after the surface of the bar has smoothly congealed.

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IV. We think to be our duty sometimes to reject bars when the Assayer reports them to contain appreciable quantities of foreign elements, lead, arsenic, sulphur, &c. for the very simple reason that all our Plant is only adapted to ~~melting~~ Coinage by the Government and not to the refining of silver and gold. If we had to ~~do~~ refining the Mint would have to be enlarged, fully doubled or quadrupled, to do all the work that ~~would~~ could be rushed upon us. When we have accidentally admitted metal that required refining, (except ~~in~~ the Gold deposits that are to be refined) it has often occupied time, and absorbed expense, beyond the capacity of the Mint, and our growls at the losses of the Government have been often, and unjustly, misinterpreted. Hence we are not infrequently obliged, as we ~~think~~ believe, to reject Silver bars that show an ugly amount of sulphur, or even

(over half more than a page)

It is well known that, in the early years of the Republic, ~~we~~ when we ~~raised~~ mined and variously procured but trifling quantities of ~~so little~~ gold and Silver, ~~that~~ and when there were no ~~of~~ private works for refining these metals in the Country, — that the Government ~~of~~ specially empowered the Mint to refine ~~as well as~~ them ~~for~~ and ~~and~~ ~~prefer~~ coinage them. But about one third of nearly half a century since, the Government began throwing off the Refining into private hands, retaining only and exclusively the Coinage, ~~which is~~ ~~Moreover at the present time and for~~ for which alone the present plant of the Mint was expressly prepared and is adapted. To execute the coinage alone which ~~that~~ the Government now calls for, requires us to employ ~~48~~ 64 men in the Melting and Refining Department alone. While the Govt ceased refining silver ⅓ of a century ago, we have ever continued Refining gold, which, ~~we~~ being small in bulk, is still ~~to be~~ executed in the Mint, by 3 or 4 hands, and in a small space.

We are ready to do all the coinage that can be called for, ~~but~~ ~~we~~ in accordance with the action of the Govt years ago, but to attempt refining silver would be rather contrary to the declared policy of the Govt, ~~for~~ it without a considerable extension of the Mint, fully double its present magnitude, which it is

a moderate show of it, because it would interfere with ~~because we have neither place, nor means to work off the sulphur without a serious interference~~ with our duties to the Government ~~properduties~~ of melting for coinage alone which ~~sometimes~~ amounts to 5½ Tons per day.

Very Respectfully
Ja^s C Booth
M^t & R.

Hon. D. M. Fox.
Superintendent

The bars containing ~~sulphuret~~ sulphur &c. could more easily be freed from it at private Refining Works, before being cast into commercial bars, because such works are ~~specially~~ adapted to this last stage of refining.

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Oct 20, 1886.

Jno. C. Bunker
Melter and Refiner.

Explaining Cin'y reply
to Chas. F. Adams Jr. Nov. 2 (?)
the condition in which
Silver Bars are expected,

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very questionable ~~o~~ whether the Congress will authorize it,
especially as numerous and extensive Private Silver Refining works are fully engaged
in the ~~operation~~ business